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SERVER APPARATUS, SUBSCRIBER
APPARATUS AND INFORMATION ON
DEMAND SYSTEM

BACKGROUND OF THE INVENTION

(1) Field of the Invention

The present invention relates to an information on demand system which provides information to subscribers through a CATV network and process improvement of a system in which subscribers pay charge to a server according to provided amount of information. Accordingly, in an information on demand system in accordance with the present invention, a plurality of different charging system are provided for every form which a subscriber utilizes the information.

(2) Description of the Prior Art

In an information on demand system such as CATV, an information provider (server) and users (subscribers) make contract each other. CATV cables are provided between the server and the subscribers and an information such as an audio/video signal is provided from the server to the subscribers. In this case, there is basically only one charging system and the charging system is that the server periodically collects the same amount of charge even if the subscriber records an audio/video information provided by the server in a video tape recorder (VTR, hereafter) or the like that at the subscriber (receiver) side or the subscriber merely listens/watches the same information by a television receiver without recording it in a VTR.

In the above-mentioned charging system, however, different charging systems can be set for the same CATV line.

Especially, since audio/video information becomes to be transmitted by a digital signal, if the audio/video information which is composed of a digital signal is recorded in a recording medium such as a digital video tape recorder (VTR), a copy which has no deterioration in audio/video quality compared with an audio/video information provided by the server can be obtained at the subscriber side. This is a problem from a view point of copyright protection.

SUMMARY OF THE INVENTION

An information on demand system in accordance with the present invention aims at making subscribers of CATV terminals pay adequate charge to a CATV server. It makes possible to control a recording/reproducing apparatus (usually called merely a recorder) and to record a received information in a recording medium. Using an information on demand system in accordance with the present invention, the subscribers can pay adequate charge to the server according to the purpose for which the subscribers use the received information.

To solve the above-mentioned problem, an information on demand system in accordance with the present invention includes an information providing apparatus for providing an audio/video information according to a subscriber's request; a display terminal for displaying the audio/video information provided by the information providing apparatus; and a recording/reproducing apparatus for recording the audio/video information provided by the information providing apparatus; and is composed so that a different amount is charged to the subscriber among the case in which only the information is displayed on a display terminal, the case in which the information is recorded in a recording/reproducing apparatus and the case in which not only the information is displayed on a display terminal but also the information is recorded in a recording/reproducing apparatus.

10 BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 2 is a block diagram of a display terminal used in an information on demand system in accordance with the first exemplary embodiment of the present invention.

FIG. 4 is a block diagram of a subscriber apparatus used in an information on demand system in accordance with a fourth exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

A block diagram of an information on demand system in accordance with a first exemplary embodiment of the present invention is shown in FIG. 1. The left side shows a block diagram of a server apparatus at a server side of the system. The block 1 is a subscriber identification apparatus for reading an identification number (ID number, hereafter) for identifying every individual subscriber. Block 2 is an information providing apparatus for providing information through a line 11. The information includes every information such as audio/video information such as movies, audio information such as music, town information showing what to see and where good restaurants are at sight-seeing spots and computer programs for games, etc.. Block 3 is a subscriber's mode recognizing apparatus for recognizing which the information is given to a subscriber's display terminal or a subscriber's recording/reproducing apparatus. Block 4 is a charging apparatus for charging a different amount between the case in which the audio/video information is given to the subscriber's display terminal and the case in which the audio/video information is given to the subscriber's recording/reproducing apparatus. Block 5 is a charge registering apparatus provided for every subscriber and each charge registering apparatus 5 corresponding to a subscriber provided with an audio/video information accumulates the amount corresponding to the output of charging apparatus 4 based on a subscriber's identification information identified at subscriber identification apparatus 1.

The right side of FIG. 1 shows a block diagram of a subscriber apparatus at a receiver side of the system. Block 6 is a provided information designating apparatus for reporting the information which the subscriber requests to the

The performance of an information on demand system composed as the above is explained below. In the exemplary embodiment, a CATV cable is used for line 11.

Information providing apparatus 2 which was allowed to provide the audio/video information transmits the audio/video information which the subscriber had requested to information receiving apparatus 7 through line 11. Information receiving apparatus 7 demodulates (decodes) the received audio/video information. In the case in which the information signal is transmitted with a scrambled procedure, the signal is provided to subscriber's mode discriminating apparatus 8 after descrambling procedure. Subscriber's mode discriminating apparatus 8 outputs the audio/video information either to display terminal 10 such as a CRT or to recording/reproducing apparatus 9 according to the subscriber's request. At the same time, the subscriber's information is transmitted to subscriber's mode recognizing apparatus 3 at the server side through line 11.

Subscriber's mode recognizing apparatus 3 which received an information from the subscriber outputs the information to charging apparatus 4. Charging apparatus 4 is set so that the charging amount is larger when the audio/ video information is provided to the subscriber's recording/ reproducing apparatus 9 than when provided to the subscri-

In the case of an audio/video information such as movies because it is necessary to record an audio/video information for several hours by a digital signal, an optical disk is used as recording/reproducing apparatus 9 in the exemplary embodiment.

15 An information on demand system in accordance with a second exemplary embodiment of the present invention is explained below referring to FIGS. 1 and 2. The blocks having similar functions to those in the first exemplary embodiment are numbered with the same reference num-
20 bers.

40 The performance of the information on demand system is similar to that of the first exemplary embodiment. Because the information in semiconductor memory 23 of display terminal 10 is erased after a designated time, when the information is provided to display terminal 10, the subscriber can enjoy a game for the designated time.

(Third Exemplary Embodiment)

Block 12 is a user's drive operating state logging apparatus for collecting information concerning to a user's drive operating state and has a configuration to collect each subscriber's charge and to write the charge information for every subscriber.

Charging apparatus 4 and charge registering apparatus 5 are included in the subscriber apparatus. Charging apparatus 4 charges a different amount between the case in which audio/video information is provided to display terminal 10 and the case in which the audio/video information is pro-

A block diagram of a subscriber apparatus of an information on demand system in accordance with a fourth 65 exemplary embodiment of the present invention is shown in FIG. 4.

The output signal of decoder/descrambler 33 is separated into a control data signal at demultiplexer 34 and the separated signals are outputted. The compressed audio signal outputted from output terminal 34b is converted into an original audio signal at audio decompressor 36. the compressed video signal outputted from output terminal 34c is converted into an original video signal at video compressor 35. As a compression method, for example, an MPEG method is used. The control data signal, the compressed

The subscriber apparatus is composed so that both the video signal and the audio signal outputted from video output terminal 37 and audio output terminal 38, 55 respectively, are outputted via terminal controller 39 as a compressed digital bit-stream and whether the ID number is written in the writing medium is checked at starting of recording and when the subscriber's ID number is not written, the audio/video information is not supplied to 60 recording/reproducing apparatus 41. Therefore, unless all the recording/reproducing apparatus ID number, the subscriber's ID number and the title name of the recorded program are registered, the subscriber can neither record the audio/video information in recording/reproducing apparatus 65 41 nor watch the program on the television receiver (display terminal).